

### **REMARKS/ARGUMENTS**

By this Amendment, independent claim 21 and dependent claims 27 and 35 are amended. Claims 21, 24 - 30, 33, 35 - 38 and 40 are pending in this application.

Favorable reconsideration is respectfully requested in view of the foregoing amendments and the following remarks.

In paragraph 3 of the Office Action the examiner rejected claim 35 “under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.” Specifically, the examiner questioned whether the reference to “a cold gas outlet” in claim 35 was intended to refer to the same cold gas outlet identified in claim 21. Claim 35 has been amended to make it clear that the cold gas outlet in claim 35 is an additional cold gas outlet. The examiner’s interpretation of claim 35 in the previous Office Action is consistent with the present amendment.

In paragraph 7, the examiner rejected claims 21, 33, 35 and 40 “under 35 U.S.C. 103(a) as being unpatentable over Rode (US Patent No. 6,044,648) in view of Roslonski (US Patent No. 3,595,030) and Arner et al. (Arner) (US Patent No. 4,566,293).”

First, it should be noted that claim 21 is the only independent claim in this application. Therefore, an indication of allowability of claim 21 should result in the allowance of all remaining dependent claims.

Applicants have amended claim 21 to more particularly point out the patentably novel features of the present invention. An explanation of the amendments to claim 21 will be set forth prior to addressing the above-stated rejection of claim 21.

First, claim 21 has been amended to make it clear that the cooling equipment is employed in a cryogenic environment, and specifically that the cooling equipment is employed for cooling a “cryogenically cooled material to be manipulated, processed or investigated.”

Second, applicants have more specifically identified the cooling space as “having an open, upper end” and that the protective bell includes an interior chamber communicating with

that open, upper end of the cooling space. This permits an operator “[to] manipulate samples present in the cooling space” through use of the “glove sleeves on [the] front side [of the protective bell].”

In addition, claim 21 has been amended to make it clear that a cold gas outlet located on a lower side of the protective bell communicates with the cooling space through the open, upper end of the cooling space and the interior chamber of the protective bell,” and that this arrangement permits “cold gas to exit the cooling space through the lower side of the protective bell to prevent misting over of said protective bell.” (emphasis added)

In addition, claim 21 has been amended to specify that no cooling gas lake forms “in the cooling equipment.” In other words, claim 21 is not limited to precluding the formation of a cooling lake only “on a bottom of the cooling space.” Support for this latter amendment is provided in the sentence beginning on line 1 of page 3 of the Specification.

Turning now to the rejection of claim 21, the Rode '648 patent is relied upon as the primary reference.

Significantly, as acknowledged by the examiner, Rode fails to teach numerous limitations specified in independent claim 21. Specifically, Rode fails to teach the following, specified limitations:

- 1) a porous buffer material arranged in the intermediate space;
- 2) a cooling agent supply line introducing the cooling agent into the porous buffer material at the open, upper end of any cooling space;
- 3) a cooling agent being transferred from the buffer material through the inner wall with the inner wall being permeable;
- 4) the ability of the cooling equipment to function without a cooling agent lake forming in the cooling equipment;
- 5) a removable protective bell including an interior chamber communicating with the open, upper end of the cooling space;
- 6) the protective bell being at least partially transparent;

7) glove sleeves on the front side of a protective bell and a cold gas outlet located on a lower side of the bell communicating with the cooling space through the open upper end of the cooling space and the interior chamber of the protective bell.

The examiner relies upon the teachings in the Roslonski '030 patent and the Arner '293 patent in an attempt to support his position that it would be obvious to employ in the Rode system all of the features omitted therefrom, as enumerated above.

Applicants acknowledge that in addressing the obviousness issue based upon a combination of prior art references it is improper to address only the deficiencies of the individual references. Rather, the issue is whether the combination of references proposed by the examiner is a proper combination, and if so, whether that combination does render obvious the subject matter specified in the claims.

First, the examiner takes the position that Roslonski teaches a porous buffer material 34 arranged in an outer compartment 32, which the examiner contends corresponds to the claimed intermediate space. In addition, the examiner takes the position that Roslonski discloses an inner wall 20 having holes 36 that correspond to the claim limitation that the inner wall is permeable. The examiner then takes the position that it would be obvious to one of ordinary skill in the art at the time of the invention to modify the cooling equipment disclosed by Rode to also incorporate a porous buffer material arranged in the intermediate space and make inner wall permeable as taught by Roslonski, so that the cooling agent supply line would first introduce the cooling agent into the porous buffer material to then permit transfer of the cooling agent from the buffer material through the inner wall to effectively insulate and maintain a reduced temperature in the cooling space. The examiner also states that the presence of a porous buffer material would capture liquid refrigerant flowing through the intermediate space not vaporized in the cooling agent supply line to thereby prevent then formation of a cooling agent lake at the bottom of the cooling space.

The examiner also notes or states that "while it does appear that a cooling agent lake could form within plenum 60 around the coil 68 (apparently referring to Rode), claim 21 recites that "no cooling agent lake forms on a bottom of the cooling space."

In this latter regard, it should be noted that claim 21 has been amended to specify that “no cooling agent lake forms in the cooling equipment.” Thus, claim 21, particularly as amended herein, makes it clear that the combination of elements in the cooling equipment, as specified in claim 21, avoids the formation of a cooling lake in the equipment.

Applicants submit that Roslonski is not properly combinable with Rode because it relates to a totally different type of cooling system having no relationship to cryogenics. Secondly, even assuming that the combination is appropriate, that combination does not render obvious the features specified in claim 21.

First, it should be noted that the Roslonski patent is directed to a portable device for cooling bottles of liquid, such as wine. This has absolutely nothing to do with sophisticated cooling apparatus employed in the cryogenic field.

It should be noted that in the Roslonski device the use of a cryogenic fluid, such as liquid nitrogen, is not even suggested. Specifically, in the paragraph beginning on line 24 of column 2, Roslonski states that the source of this refrigerant could be a carbon dioxide gas.

Thus, the Roslonski patent is directed to a device which employs a refrigerant that is always in a gaseous state. The device is not at all concerned with employing a cryogenic fluid that initially is in a liquid state, and which ultimately is caused to transform into a vapor phase to provide the required cryogenic cooling operation.

Accordingly, one skilled in the art would not even think to employ any features of a portable device for cooling bottles of wine in considering design modifications to a cooling device for cooling a cryogenically cooled material.

Moreover, even if the Roslonski patent was properly combinable with Rode, the combination still would not suggest the inclusion of a buffer material arranged in the intermediate space between the outer wall and inner wall, as specified in claim 21.

In particular, the Rode '648 device, in and of itself, does disclose the use of a buffer or insulating material in the device, as is clearly illustrated in Fig. 3. Thus, although Rode clearly recognizes the desirability of including a buffer material in the device, that buffer material is

provided in a space that is unrelated to the intermediate space through which a coolant fluid is directed. In particular, referring to Fig. 3 of Rode, although the system does include insulation 44, that insulation is not provided in plenums 56, 58 and 60, in which the refrigerant flows.

Thus, the Rode '648 patent itself suggests that when a buffer material is employed in the disclosed system it is not employed in any chamber through which the refrigerant flows.

In addition, the flow of refrigerant in the Roslonski device is in a direction opposite to that required in applicant's device.

The examiner apparently recognizes that even the combination of Rode and Roslonski, assuming that combination is proper, fails to disclose the obviousness of a system employing a removable protective bell on the cooling space, let alone a protective bell that includes an interior chamber communicating with an open, upper end of the cooling space. Moreover, since the combination fails to disclose a protective bell of any type, it clearly does not disclose or suggest then obviousness of a protective bell that is at least partially transparent or any protective bell having a cold gas outlet that is located on a lower side of the protective bell for communicating the cooling space through the open, upper end of the cooling space and the interior chamber of the protective bell for permitting cooling agent and cold gas to exit the cooling space through the lower side of the protective bell to prevent misting over of protective bell, as is now clearly specified in claim 21.

To attempt to overcome the above deficiency in the combination of Rode and Roslonski the examiner relies upon the teachings in the Arner '293 patent. Applicants submit that this piece-meal combination of references simply is inappropriate and constitutes improper hindsight reconstruction using applicants' disclosed invention as a blueprint for the combination. Moreover, even if the combination were proper it would not result in the claim combination specified in claim 21.

Specifically, in applicants' invention, particularly as amended herein, it is clearly stated that then protective bell has "a cold gas outlet located on a lower side" thereof. Moreover, it is

specified that this protective bell communicates with “the cooling space through [the] open, upper end of said cooling space and said interior chamber of the protective bell for permitting cooling agent and cold gas to exit the cooling space through the lower side of the protective bell to prevent misting over of said protective bell.”

It should be noted that in the primary reference to Rode, the flow of coolant is controlled by fans located in the surface remote from the lid 46, and forces the fluid to flow in a confined, circular path through the fan. In other words, there is no system for actually directing a gaseous coolant through an area occupied by the lid 48 (assuming that the lid were replaced by a protective bell) to deal with the problem of misting addressed by the present invention, as specified in claim 21.

Moreover, as the examiner actually acknowledges, the Rode system still does not preclude the formation of a cooling agent lake within plenum 60 around the coil 68. In this regard, the examiner stated in his rejection

“Additionally, while it does appear that a cooling agent lake could form within plenum (60) around the coil (68), claim 21 recites that “no cooling agent lake forms on a bottom of *the cooling space*.” (emphasis included)

Claim 21, particularly as amended herein, now makes it clear that the system includes a combination of features to prevent the formation of a cooling agent lake “in the cooling equipment.” Therefore, claim 21 is no longer limited to precluding the formation of the lake on a bottom of the cooling space. The amendment to claim 21 relating to preventing the formation of a cooling agent lake, “in the cooling equipment” is a further feature supporting the non-obviousness of the present invention.

Moreover, the Arner '293 patent does not disclose a protective bell communicating the interior chamber thereof with the cooling space, as is required in claim 21.

The Arner device is a self-contained freeze box 10 that has side walls 11, 12, front wall 13, back wall 14, floor 15 and cover 16 providing a structure that is “hermetically sealed from the outside atmosphere.” (See paragraph beginning on line 45 of column 2). It should be noted

that the sample employed in the freeze box 10 is actually supported on a sample holder 28 located within the confines of the freeze box; not in a separate cooling space.

Thus, this difference in function and mode of operation between applicants' cryogenic unit and the freeze box disclosed in the Amer'293 patent is an additional reason why the combination of the Amer '293 patent with the Rode and Roslonski patents does not render obvious the invention specified in independent Claim 21.

In view of the above remarks, applicants submit that claim 21, particularly as amended herein, sets forth patentably novel subject matter, and an indication to that effect is respectfully requested.

Claims 24 – 30, 33, 35 – 38 and 40 are either directly or indirectly dependent upon claim 21 and therefore are submitted to be patentable for at least the same reasons discussed above in connection with claim 21.

Moreover, in connection with the rejection of claims 27 and 28 the examiner has relied upon the Palma '336 patent. However, the Palma '336 patent is directed to an invention totally unrelated to the cooling equipment specified in the claims of this application. Specifically, the Palma '336 patent relates to a coffin construction. Applicants submit that a person skilled in the art would not look to the coffin technology for the purpose of designing cryogenic cooling equipment.

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In view of the above amendments and remarks applicants submit that all of the claims presented for consideration herein set forth patentably novel subject matter and an indication to that effect is respectfully requested.

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